

Cleaning and Disinfection: Overkill?



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Concerned by the constant threat of viruses and superbugs, people are becoming more and more eager to clean and disinfect everything in sight – are they overdoing it? In a word, yes. It is important to realize that the overzealous use of disinfectants may actually have a harmful effect on our health.

1. Cleaning and Disinfection 101

Although the terms “cleaning” and “disinfecting” are often used interchangeably, their process and purpose differ. Knowing the distinct functions of cleaning and disinfecting will not only help you develop a more efficient and cost-effective cleaning program, it will also help safeguard the health and safety of those around you.

Cleaning is a process which removes substantial amounts of any material that is not part of an item, including dust, soil, a large number of micro-organisms and the organic matter (eg. feces, blood) that protects them. Cleaning is usually a prerequisite to disinfection and sterilization. In contrast, **disinfection** is a process that eliminates an item’s potential to cause infection by reducing the number of microorganisms present. A disinfectant is a chemical capable of achieving disinfection.¹

2. Disease Prevention

The first and best line of defense against viruses and infections is good hygiene combined with proper cleaning and disinfection of frequently touched surfaces. These practices can protect against illnesses as varied as staph infections, the common cold, the flu, gastrointestinal disorders, meningitis, bronchitis, and hepatitis A.

Recent reports of the rise of infectious diseases and outbreaks, such as staph infections, the avian flu, mad cow disease and SARS have underscored the need for effective cleaning and disinfection. Indeed, data from US hospitals has shown that the number of infections caused by a common bacterium has increased by over 7% each year from 1998 to 2003.² For example, *Staphylococcus aureus* (also known as staph) is a significant cause of a wide range of infectious diseases in humans ranging from minor skin infections to life-threatening diseases such as pneumonia and meningitis. In 2007 and 2008, the surge of a particularly dangerous type of antibiotic-resistant staph infection known as MRSA (methicillin-resistant *Staphylococcus aureus*) in schools and communities in the U.S. caused a nationwide scare, causing Canadian health officials to be on high alert for occurrences and prevention of the disease. In fact, the staph bacterium is commonly found on the skin of approximately one third of the population, although most people have no active infection.³

¹ Disinfection in Healthcare, 3rd edition. 2004. Peter Hoffman, Christina Bradley and Graham Ayliffe.

² US Hospitals Report Infections Increasing In Frequency and Cost – *ScienceDaily* [Sep. 26, 2007] — The research is published in the November 1 issue of *Clinical Infectious Diseases*, now available online.

³ Adapted from materials provided by Infectious Diseases Society of America, via *EurekAlert!*, a service of AAAS.

“Although a good cleaning program is crucial to prevent the spread of infectious diseases, it is important to be aware of the effects of the products and chemicals that we use, both in terms of our health and on the environment. Also, the overuse of disinfectants may actually have an adverse effect on our immune system. Our bodies need to be exposed to various microbes in order to develop the antibodies that make up a strong immune system.”

3. The problem with being *too* clean

Although a good cleaning program is crucial to prevent the spread of infectious diseases, it is important to be aware of the effects of the products and chemicals that we use, both in terms of our health and on the environment. Also, the overuse of disinfectants may actually have an adverse effect on our immune system. Our bodies need to be exposed to various microbes in order to develop the antibodies that make up a strong immune system. Therefore, weakened immune systems superbugs, such as MRSA, and may be linked to the increased and indiscriminate use of disinfectants and anti-bacterial products. Instead, the focus should be on healthier cleaning solutions, used appropriately, to ensure they are effectively protecting us against disease and infection without having a negative impact on health and indoor air quality.

Many chemicals contained in cleaners and disinfectants contribute to poor indoor air quality and have been implicated in the increase of respiratory ailments such as asthma. Exposure to and contact with cleaning chemicals can also cause eye, nose and throat irritation, skin rashes, headaches, dizziness, nausea and sensitization. Disinfectants used for routine cleaning in hospitals, food service industry, and by property managers, such as quaternary ammonium compounds, phenols and bleach, are registered pesticides. Health effects from long-term exposure to quaternary ammonium compounds include asthma and hypersensitivity syndrome.

In commercial settings, cleaning chemicals are often purchased in concentrated solutions that require mixing and/or dilution by the employee who is responsible for application. The incorrect dilution of these products contributes to the adverse health effects suffered by janitorial staff. Also, certain cleaning chemicals which are mixed together may produce synergistic effects. This means that the interaction of two or more of these chemicals produces a health effect greater than that of the individual chemical alone. For example, a quaternary ammonium compound used in combination with a bleach cleaner release a toxic gas called chloramines into the air.⁴

4. Developing a safe and effective cleaning program

4.1 Cleaning

A thorough cleaning of the surfaces that people frequently touch (i.e. sinks, toilets, doorknobs, light switches, elevator buttons, etc.) is a key step in preventing the spread of disease. Cleaning should remove many of the germs living on these surfaces, but the ones left behind will soon begin to grow and to re-accumulate. Therefore, to be safe, most janitors also use a disinfectant product to kill the bacteria and viruses that are present. In order to remove all disease causing organisms, including spores, an additional sterilization process would be required.

- **Dilution control:** In order to ensure the safety of your janitorial staff and to gain optimum use of the cleaning products that you purchase, it is important to have a proper dilution control system and to have training from your cleaning solution provider.

- **Green cleaning:** Consider cleaning with environmentally preferable products in order to reduce exposure to dangerous chemicals. By carefully choosing environmentally sound cleaning chemicals, cleaning methods and cleaning equipment, businesses can realize significant productivity gains and increase the indoor air quality (IAQ). Good air quality results in an environment where workers feel healthy and comfortable and as a result, are more productive. This, in turn, decreases both costs and liabilities.

⁴ Cleaning Chemical Use in Hospitals Fact Sheet: www.noharm.org



4.2 Disinfecting

- **Select the proper disinfectant:** Disinfectant products work by oxidizing the germs, breaking down their cell walls, or otherwise deactivating them. Different ingredients or combinations of ingredients kill different germs. Therefore you either need to select a disinfectant that works on the specific germs you are trying to get rid of, or select a broad-spectrum product that works on all of the germs that you might encounter. For example, to prevent the spread of MRSA, use disinfectants registered by DIN. Please refer to *Health Canada's Drug and Health Products website for more information:* http://www.hc-sc.gc.ca/dhp-mps/index_e.html. Note that the DIN requires that all disinfectants be registered; this registration should not imply a sense of safety.

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- **Follow instructions:** Be sure that cleaning procedures allow the disinfectant to stay on surfaces for the full amount of time recommended by the product instructions. Leaving the product on a surface for longer than recommended does not increase its effectiveness but can lead to dangerous and unnecessary chemical exposures. Leaving it on for less time than recommended can inhibit its effectiveness.

- **Review MSDS:** Take care to review each product's material safety data sheet for other ingredients that may harm the user. For example, be wary of combined cleaner-disinfectants that contain butoxyethanol or ethanolamine. Trade magazines may also contain general information about disinfectant products and their ingredients. Some of these publications also list their articles on the internet. For example, refer to <http://www.cmmonline.com>.⁵

- **Know when to disinfect and when to clean:** In order to use disinfectants most optimally and to reduce their negative effects, it is important to educate your cleaning staff and to carefully plan a cleaning maintenance program. The use of disinfectants should be limited to areas where germs and infections are easily spread. For other areas, a thorough cleaning, preferably using green cleaning products, should suffice. A discriminate use of disinfectants will also save your company both time and money.

4.3 Proper Hand Washing:

Proper hand washing is the single most important measure for preventing the spread of germs, viruses and infection. Physical removal of contaminants by washing with soap and water is a very effective means of infection control. Failure to wash your hands thoroughly and the proper length of time is one of the major problems of infection control. Educate your staff and the public about proper hand washing technique.

The importance of hand washing in the health care industry was recently discussed in a Globe and Mail article ("**Hospitals face hand-washing crackdown**", **Lisa Priest, May 20, 2008**). As of January 2009, hospitals, nursing homes, and other facilities seeking accreditation will have to perform hand-hygiene audits and plan to improve hand-washing compliance. According to the article, there are an estimated 220,000 hospital-acquired infections each year, half of which can be prevented through proper hand hygiene. Experts currently estimate that only 40% of healthcare providers properly wash their hands.

⁵ Janitorial Products Pollution Prevention Project - Sponsored by US EPA, State of California, Santa Clara County, the City of Richmond, and the Local Government Commission. Written by Thomas Barron, Carol Berg, and Linda Bookman. 6/99.

Below are some helpful handwashing tips:



- Areas most frequently missed during hand washing
- Less frequently missed
- Not missed

(Adapted from Taylor L (1978), An evaluation of hand washing techniques - I, Nursing Times, 12 January, pp 54-55)

1. Wet hands with warm running water prior to reaching for soap, either in bar or liquid form.
2. Rub hands together to make a lather. Do this away from running water, so the lather isn't washed away.
3. Wash the front and back of hands, between fingers and under nails. Continue washing for 15 seconds or more.
4. Rinse hands well under warm running water.
5. Dry hands thoroughly with a clean towel or air dryer.

In addition to a regular cleaning and maintenance program, taking the extra few minutes to wash your hands, encouraging your employees to do the same, and ensuring that your company is providing the most hygienic environment to do so, have become essential for any business. These simple actions will go a long way in protecting the health and safety of your employees and customers.

About Avmor Ltd.

Headquartered in Laval, Quebec, Avmor is Canada's leading manufacturer of professional cleaning solutions aimed at the Jan/San and Foodservice markets. Avmor holds a GMP (Good Manufacturing Practices) license, which is a prerequisite to be able to manufacture hand soaps that include disinfection claims and a DIN (Drug Identification number) provided by Health Canada. Avmor offers a full range of hand care products. Avmor's complete line of cleaning products include Cleaners/Degreasers, Floor Care, Washroom Care, Food Service Care, Hand Care, BioMaxx, Disinfectants and others. Some of Avmor's signature brands are Av-mixx Dilution Control System, **Biomor Biological Cleaning Solutions**, Quick Stuff Food Service Cleaning System, Synergy Floor Care and **EcoPure**, its new environmentally responsible sanitation program. For over 50 years, Avmor has remained at the industry forefront, defining product performance standards and striving for the safest and most cost-effective cleaning systems for professional use. Avmor Ltd. is a privately held company. For additional information on Avmor, please visit www.avmor.com / www.avmorgreen.com.

